

1165-16-223

Ellen Kirkman, Robert Won* (robwon@uw.edu) and **James J Zhang**. *Degree bounds for Hopf actions on Artin–Schelter regular algebras.*

In 1916, Noether proved that over a field of characteristic 0, if a finite group G acts linearly on the polynomial ring $k[x_1, \dots, x_n]$, then the invariant subring can be generated by polynomials of degree at most $|G|$. The Noether bound was extended to the non-modular case (where $|G|$ is invertible in k) independently by Fleischmann, Fogarty, and Derksen–Sidman. In the modular case (where $|G|$ is not invertible in k), the Noether bound does not hold, but Symonds proved that the invariant subring can be generated by polynomials of degree at most $n(|G| - 1)$.

We consider semisimple Hopf actions on noncommutative Artin–Schelter regular algebras, proving several upper bounds on the degrees of the minimal generators of the invariant subring, and on the degrees of syzygies of modules over the invariant subring. This work is joint with Ellen Kirkman and James J. Zhang. (Received January 18, 2021)